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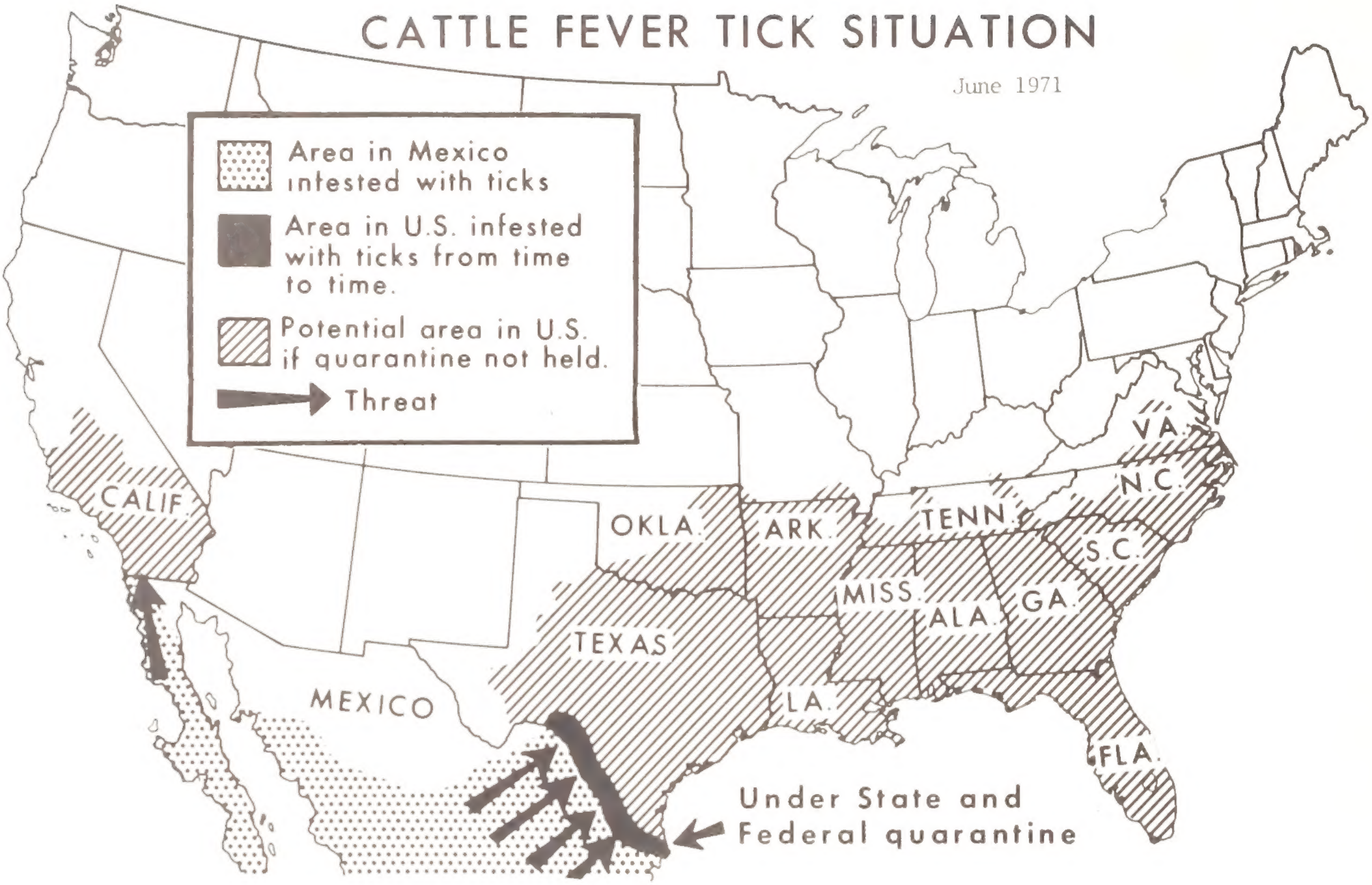
March 1972

Cooperative
State-Federal
TICK ERADICATION ACTIVITIES
Fiscal Year 1971

Animal and Plant Health Service • U.S. DEPARTMENT OF AGRICULTURE

CATTLE FEVER TICK SITUATION

June 1971


Area in Mexico infested with ticks
Area in U.S. infested with ticks from time to time.
Potential area in U.S. if quarantine not held.
Threat
CALIF.
OKLA.
ARK.
TENN.
VA.
N.C.
S.C.
MISS.
ALA.
GA.
TEXAS
LA.
FLA.
MEXICO
Under State and Federal quarantine

Prepared by

Animal Health Programs
Veterinary Services
Animal and Plant Health Service
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Hyattsville, Maryland 20782

Effective October 31, 1971, Animal Health Division, ARS, became Animal Health Programs, Veterinary Services, Animal and Plant Health Service (APHS)

COOPERATIVE STATE-FEDERAL TICK ERADICATION ACTIVITIES

FISCAL YEAR 1971

The Tick Eradication Program

Cattle fever ticks, Boophilus annulatus and Boophilus microplus, spread bovine piroplasmosis.

An all-out State-Federal cooperative eradication program was instituted by the U.S. Department of Agriculture (USDA) in 1906. In 1943, 37 years later, the tick had been eradicated from the United States except for a narrow buffer zone under Federal and State quarantines along the Texas-Mexico border. There, reinfestations occur, and an active program is required to prevent spread into adjacent areas. Reinfestations have also occurred in California and in Florida from time to time. But vigilance and prompt eradication measures have eliminated the outbreaks. Keeping the ticks out of the United States is a major part of the effort against cattle fever ticks.

The eradication program includes inspection, quarantine, and dipping of infested and exposed animals and animals from infested or exposed premises.

National Tick Surveillance Program

A detailed report, "National Tick Surveillance Program, Calendar Year 1970," was published in July 1971. This report indicated that during calendar year 1970, 3,025 tick survey collections were made and identified. Of these collections, 1,311 were from cattle, 309 from dogs, 671 from horses or mules, 182 from zoo animals and miscellaneous hosts, 259 from native wildlife, and 293 from animals offered for importation.

During fiscal year 1971, 696 lots of ticks were collected at public stockyards and sent to the Animal Health Division's (ANH) laboratory in Beltsville, Md., for identification.

Table 1 lists exotic ticks and certain other parasites that were collected in the United States in fiscal year 1971 and the hosts on which these parasites were found.

TABLE 1.--Exotic ticks and certain other parasites collected

State or Area	Date	Parasite	Host and remarks
Alabama	August 1970	*Dermacentor nitens*	Horse from Puerto Rico. Collected at Mobile. 1/
Arizona	July 1970-June 1971	*Dermacentor albipictus*	10 collections from cattle from Sonora, Mexico. Collected at Douglas. 1/ 2/
	July 1970	*Amblyomma dissimile*	Chicken snake from Colombia, South America. Collected at Tucson International Airport. 1/
	July 1970	*Amblyomma dissimile*	Rat snake from Colombia, South America. Collected at Tucson International Airport. 1/
	September 1970	*Dermacentor albipictus*	Cattle from Sonora, Mexico. Collected at Nogales. 1/
	September 1970	*Ornithodoros talaje*	Lizard from Baja California, Mexico. Collected at Tucson International Airport. 1/
	October 1970	*Rhipicephalus pulchellus* *Amblyomma lepidum*	Wild game hides from Africa. Collected at Tucson International Airport. 1/
	October 1970	*Rhipicephalus evertsi* *Hyalomma turanicum*	Trophy hides from South-West Africa. 1/
	December 1970	*Otobius megnini*	Cattle from Sonora, Mexico. Collected at Nogales. 1/
	February 1971	*Rhipicephalus sanguineus*	Inanimate object. Collected at Nogales. 1/
	March 1971	*Dermacentor hunteri*	Mountain goat hide from Baja California, Mexico. 1/
California	July 1970	*Dermacentor variabilis* *Dermacentor occidentalis*	Stray cattle from Mexico. Collected at Calexico. 1/
	March 1971	*Boophilus annulatus*	Horse from Tijuana, Mexico. Collected at San Ysidro. 1/
	May 1971	*Hyalomma truncatum* *Amblyomma variegatum*	Cape buffalo skin from Mozambique. Collected at San Pedro. 1/
Colorado	April 1971	*Rhipicephalus sanguineus*	Dog from Trinidad. 3/
Florida	August 1970	*Dermacentor nitens*	Horse offered for import. Collected at Miami. 2/
	January 1971	*Amblyomma dissimile*	Iguana at Busch Gardens, Tampa. 1/
	March 1971	*Amblyomma dissimile*	Boa constrictor in pet shop in Miami. Shipped from Brazil, South America. 2/
	March 1971	*Dermacentor nitens*	Horse offered for import. Collected in Miami. 2/
Georgia	April 1970	*Rhipicephalus sanguineus*	Dried plants from Canal Zone. Collected at Atlanta Airport. 1/
Illinois	September 1970	Dermestidae (skin beetles)	Trophy skins from Africa. Collected in Chicago. 2/
	September 1970	*Haematopinus suis* (eggs)	Swine bristles of toilet brush imported from Italy. Collected in Chicago. 1/
	May 1971	*Rhipicephalus sanguineus*	Inanimate object from Vietnam. Collected in Chicago. 1/
	April 1971	*Amblyomma javanense*	Pangolin from Thailand. Collected at Lincoln Park Zoo, Chicago. 4/
	June 1971	*Cyclopodia horsfieldi* (bat fly)	Fruit bat imported from Thailand. Collected at Lincoln Park Zoo, Chicago. 4/
Maryland	May 1971	*Rhipicephalus sanguineus*	Sheep skin from Australia. Collected at Baltimore. 1/

See footnotes at end of table.

TABLE 1.--Exotic ticks and certain other parasites collected--continued

State or Area	Date	Parasite	Host and remarks
Massachusetts---	October 1970	*Heleonomus* sp.(chewing lice)	Cranes from Tasmania. 1/
	May 1971	*Haemaphysalis hystricis*	Tapir from Southeast Asia. Collected at Franklin Park Zoo, Boston. 4/
Michigan--------	January 1971	*Haematomyzus elephantis* (elephant louse)	Elephants from Bangkok, Thailand. 2/
New Mexico------	December 1970	Dermestidae (skin beetles)	Beef jerky from Mexico. 5/
New Jersey------	September 1970	*Rhipicephalus pulchellus* *Rhipicephalus evertsi* *Amblyomma gemma*	Zebra from Kenya, East Africa. Collected at International Animal Quarantine Station, Clifton. 2/
	December 1970	*Rhipicephalus sanguineus*	Hedge hog from Germany. Collected at International Animal Quarantine Station, Clifton. 2/
	March 1971	*Rhipicephalus pulchellus* *Rhipicephalus evertsi*	Zebra from Kenya, East Africa. Collected at International Animal Quarantine Station, Clifton. 2/
Oregon----------	January 1971	*Amblyomma dissimile*	Boa constrictor. Collected in Polk County. 6/
Texas-----------	July 1970-June 1971	*Boophilus annulatus*	34 collections. Collected at ports of
		Boophilus microplus	24 collections. Brownsville, Del Rio,
		Boophilus sp.(immatures)	55 collections. Eagle Pass, El Paso,
		Dermacentor albipictus	52 collections. Laredo, and Presidio. 1/
	September 1970	*Amblyomma hebraeum*	Rhinoceros from South Africa. Collected at Houston. 2/
Virgin Islands--	March 1971	*Amblyomma variegatum*	Sheep. Collected at Fredericksted, St. Croix. 7/
	March 1971	*Amblyomma variegatum*	Cattle. Collected at Frederickwsted, St. Croix. 1/

1/ Collected by an Animal Health inspector, USDA.

2/ Collected by an Animal Health veterinarian, USDA.

3/ Collected by a veterinary practitioner.

4/ Collected by a zoo veterinarian or other zoo personnel.

5/ Collected by a consumer.

6/ Collected by a private owner.

7/ Collected by a Consumer and Marketing Service meat inspector, USDA.

Parasite Identification and Confirmation

Emphasis on the importance of collecting ticks from all livestock species for identification continued during fiscal year 1971. A total of 2,852 collections of ticks were received and identified at the ANH Division Ectoparasite Reference Center, Beltsville. The laboratory also identified 265 mite specimens and 103 miscellaneous (lice, grubs, fleas, etc.) specimens.

Approximately 2,695 collections of suspected screwworm larvae were received and identified at Beltsville and at the ANH Division Screwworm Data Center, Mission, Tex. Of these, 741 collections were identified as screwworms, and the remainder were classified as various species of blowfly larvae.

Chemical Analyses

During fiscal year 1971 the ANH Division Chemical Reference Laboratory at Beltsville actively supported field activities and, in addition to tissue residue work, performed quantitative analyses on the following samples.[1]

Arsenic - 13,104
Ciodrin - 18
Co-Ral - 988
Delnav - 8,607
Imidan - 114

Tick Eradication Training Schools

A tick eradication training school was held in Laredo, Tex., July 13-17, 1970. There were 14 participants from the ANH Division and four from the Texas Animal Health Commission. The 14 ANH personnel were from Alabama, Arizona, Colorado, Florida, Kentucky, Louisiana, Missouri, Nebraska, Texas, and Puerto Rico. In addition, one veterinarian employed by the government of Mexico attended. This brings the total number of persons receiving such training to 238.

The training sessions were conducted by ANH Division personnel to teach the livestock inspectors and veterinarians the fundamentals of the identification, biology, inspection, treatment, and eradication of cattle fever ticks (*Boophilus* spp.). Emphasis was also placed on the recognition and importance of domestic and exotic livestock ticks.

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[1] Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture.

TABLE 2.--Tick eradication activities in systematic and final areas of Texas

Activities Fiscal Years	1952	5-year average 1958-1962	5-yr.average 1963-1967	1968	1969	1970	1971
	Number	Number	Number	Number	Number	Number	Number
Inspected for ticks							
Systematic area 1/							
Herds or lots	32,363	35,976	45,211	36,441	33,268	41,151	46,962
Livestock	558,809	774,606	1,268,839	934,416	775,724	806,926	680,360
Final area 1/							
Herds or lots	12,011	14,092	17,890	15,277	15,775	19,857	28,111
Livestock	168,088	297,008	473,002	395,744	354,099	558,057	963,650
Dipped or sprayed for ticks							
Systematic area							
Herds or lots	13,845	10,070	12,491	13,587	14,731	14,482	15,751
Livestock	81,685	54,826	79,788	65,484	79,103	71,695	84,214 2/
Final area							
Herds or lots	113	473	702	877	1,227	1,367	4,282
Livestock	1,323	2,348	4,061	3,441	25,845	30,843	54,206 2/
Intrastate certificates issued							
Number of certificates	14,913	12,930	14,323	14,431	15,727	15,732	15,725
Number of livestock	57,704	80,362	102,529	62,297	70,368	70,821	74,259
Interstate certificates issued							
Number of certificates	13	178	33	3	8	3	2
Number of livestock	808	12,724	4,305	159	1,334	114	4
Herds held for further treatment							
Systematic area	92	10	30	19	46	41	118
Final area	0	2	1	3	9	7	54
Tick-infested native herds found							
Systematic area	29	9	28	13	32	12	43 3/
Final area	1	0	1	2	15	7	68
Mexican livestock illegally entering United States							
Equine							
Caught	1,873	82	123	92	127	147	232
Tick-infested	183	6	5	5	4	20 2/	40
Cattle							
Caught	147	38	118	90	67	110	93
Tick-infested	82	15	34	14	17	20 2/	64
Sheep and goats							
Caught	0	1	1	0	0	0	0
Tick-infested	0	0	0	0	0	0	0
Swine							
Caught	0	0	0	0	0	0	13
Tick-infested	0	0	0	0	0	0	0
Exposures to clean premises	108	26	33	16	46	26	136
Re-exposures to held premises	73	3	2	1	1	8	8
U.S. livestock straying into Mexico and returning							
Caught	7	16	31	16	13	28	20
Tick-infested	0	0	1	0	0	0	0
Importation of livestock from tick-infested areas of Mexico into Texas							
Offered for importation					692,665	671,824	503,817
Rejected because of B. spp. infestation				11,707	13,289	24,327	9,936

1/ The systematic area is that area under Federal quarantine. The final area is that area outside the area under Federal quarantine.

2/ All treatments were with arsenic except for 19,201 cattle treatments and 4,039 horse treatments using Delnav.

3/ Does not include premises on which tick-infested livestock illegally entering the United States were found.

Active Program Continues in Texas

As the territory in Mexico along the lower Rio Grande River is tick-infested, reinfestations in Texas, by ticks carried by Mexican animals illegally entering the United States, occur regularly. The river, serving as the international boundary, is not an effective barrier against such illegal movements (See Table 2).

The systematic eradication area, under Federal and State quarantine, extends from Del Rio to the Gulf of Mexico, approximately 500 miles. This zone is constantly patrolled by ANH Division inspectors who, in cooperation with the Texas Animal Health Commission, work diligently to reduce the introduction and prevent the dissemination of the ticks. The areas under quarantine include parts of Cameron, Hidalgo, Kinney, Maverick, Starr, Val Verde, Webb, and Zapata Counties.

Of the 56 tick-infested herds in the systematic area, 33 were found by apprehension and inspection of stray livestock, 15 at dipping and/or inspection prior to movement, three through 14-day or other routine inspections, two as a result of mingling of livestock, and one each by pasture inspection, chute inspection, and pen inspection.

Of the 56 infestations, 33 resulted from tick-infested livestock straying from Mexico. It was not possible to identify the source of 25 infestations.

Of the 27 infested herds found in the final area, 23 were found on pasture inspection, two when apprehending tick-infested smuggled horses, and one when infested native livestock moved to a clean premises; and one infestation was found by ANH Division inspectors at a public stockyards.

The source of 24 of the infestations in the final area was not determined, one was caused by movement of infested native livestock, and two resulted from infested smuggled horses.

There were 793 lots of ticks submitted to the ANH Ectoparasite Reference Center for identification; three skin scrapings and 14 lots of screwworm larvae were also submitted by the tick force. Of the ticks submitted, 18 were B. microplus.

Cattle offered for importation from Mexico are carefully inspected for ticks when presented for entry. They must be free of ticks and must be given a precautionary dipping before entering the United States.

On February 6, 1971, an ANH inspector found B. microplus ticks at a Hidalgo County auction market. The infested cattle were from Cameron County. Epidemiological investigations disclosed 22 infested premises in Cameron County, one infested premises in Hidalgo County, and 29 exposed premises in Cameron, Hidalgo, Starr, Webb, Bexar, Live Oak, and Willacy Counties.

State quarantines were placed on all infested and exposed premises, and an area quarantine was placed on approximately 600 square miles in Cameron County outside the systematic area. Systematic eradication procedures were inaugurated. The outbreak area includes an estimated 780 herds comprising 18,319 cattle and 882 horses.

Eleven dipping vats met the criteria required for use of dioxathion (Delnav) permitted dip and 19,201 cattle and 4,039 horses were treated with Delnav during a period of 4 months.

Although Delnav was effective in destroying *B. microplus*, ranchers felt that cattle toxicity problems were greater than with arsenic and requested that the vats be charged with arsenic rather than Delnav.

During the 4-month period, 19,201 cattle were dipped in Delnav and 64 calves died following two, three, or more dippings or sprayings. Most of these were 3 months of age or younger. Nearly all of 158 calves treated with atropine lived. Others showing milder signs of toxicity recovered without treatment. Owners thought that although some of the more severely affected calves lived they did not gain weight as well as they should.

This is in contrast to the experience during the 1968 outbreak in Dimmit County where a total of 12 cattle deaths were associated with dipping or spraying with Delnav of 28,525 cattle. Only four of the 12 could be attributed to Delnav toxicity. The four deaths followed treatment using other than the approved procedures.

TABLE 3.--Texas - Total Tick Collections Submitted. Fiscal Year 1971

Submitted by:	Tick Patrol	Field Activities	Stockyards	Ports	Other	
Month						Totals
July	37	15	39	1	4	96
August	56	36	22	9	5	128
September	83	32	13	6	5	139
Quarterly Totals	176	83	74	16	14	363
October	54	13	6	0	3	76
November	38	17	7	20	2	84
December	25	21	5	60	0	111
Quarterly Totals	117	51	18	80	5	271
6-Month Totals	293	134	92	96	19	634
January	27	22	6	29	0	84
February	49	30	15	7	1	102
March	79	38	12	14	0	143
Quarterly Totals	155	90	33	50	1	329
April	95	56	13	3	2	169
May	102	134	21	5	28	290
June	148	107	49	14	115	433
Quarterly Totals	345	297	83	22	145	892
FY 1971 Totals	793	521	208	168	165	1,855

During fiscal year 1969, 1970, and 1971, the following livestock were inspected and dipped on St. Croix:

	1969		1970		1971	
	Inspected	Dipped	Inspected	Dipped	Inspected	Dipped
Cattle--------	36,674	36,701	20,877	23,482	3,195	417
Sheep---------	9,667	9,667	3,984	3,810	1,111	829
Goats---------	9,219	9,219	4,563	1,683	100	0
Horses--------	1,996	2,014	1,270	1,158	62	30
Donkeys-------	0	3	2	0	0	0
Mules---------	0	2	0	0	0	0
Swine---------	9,669	9,669	874	0	0	0
Dogs----------	972	972	263	133	1	0
Cats----------	2	0	0	0	0	0
Rabbits-------	16	0	0	0	0	0
Chickens------	233	0	0	0	0	0
Mongooses-----	0	0	11	0	0	0
Deer----------	0	0	31	0	13	0

Collections of ticks made in the U.S. Virgin Islands:

Boophilus microplus	1969	1970	1971
Cattle-------------	145	145	21
Horses-------------	1	5	0
Deer---------------	12	28	18
Goats--------------	1	8	0
Mongooses----------	0	1	0
Sheep--------------	0	4	2
Tick drag----------	1	0	0
Unknown------------	4	0	6
Total--------	164	191	47
Dermacentor nitens			
Cattle--------------	4	14	4
Horses------------	107	94	18
Deer--------------	8	12	0
Dogs--------------	0	1	0
Donkeys-----------	0	1	0
Goats-------------	1	3	0
Sheep-------------	0	2	0
Man---------------	0	0	1
Unknown-----------	0	0	1
Total-------	120	127	24
Rhipicephalus sanguineus			
Dogs-------------	9	24	2
Ornithodoros puertoricensus			
Mongooses--------	49	10	0
Amblyomma variegatum			
Cattle-----------	0	1	1
Sheep------------	0	0	2
Total------	0	1	3

U.S. Virgin Islands and Guam

The U.S. Virgin Islands of St. Croix, St. Thomas, and St. John remain tick-infested and under Federal quarantine. The Island of Guam is also under Federal quarantine.

Ticks collected from cattle on St. Croix were identified on September 1, 1967, as *Amblyomma variegatum* (tropical bont tick). This was the first evidence that the tropical bont tick might establish itself on U.S. territory. This tick is an important pest in many areas of the world and can serve as a vector of diseases affecting animals and man. The tick is a three-host tick with a very broad host range. Generally, the adult tick feeds on larger animals; and the larval and the nymphal stages feed on smaller animals such as cane rats, ground squirrels, and mongooses.

A program was immediately undertaken to prevent further spread of the tick on the island, and an eradication program was quickly developed. All livestock on the island were immediately inspected. Later a second inspection was made, and in June 1969 all livestock were inspected again. The infestation was found to be limited to six contiguous premises involving some 2,600 acres. *A. variegatum* ticks were collected from cattle, sheep, goats, dogs, horses, and mongooses.

The *A. variegatum* eradication program on St. Croix included insular quarantines on the infested premises, dipping all livestock at 7-day intervals (changed to 14-day intervals in August 1968) in 0.125 percent coumaphos (Co-Ral) and spraying infested premises with 2 pounds of active ingredient carbaryl (Sevin) per acre.

The aerial spraying was planned and conducted by Special Operations Force, U.S. Department of the Air Force, Eglin Air Force Base, Florida. Sevin was sprayed from jeeps carrying the spraying equipment or from aircraft, depending on terrain. Spraying was completed in December 1968.

The last collection of *A. variegatum* from livestock on a farm had been in April 1968. The survey of St. Croix in May 1969 revealed no *A. variegatum* ticks, and overall results were encouraging. However, on August 7, 1969, a single male tick was found at the slaughterhouse on a bull from the eastern part of the island; the six previously infested premises were on the western end. Inspections of livestock on the farm of origin of the bull and on other farms in that area did not disclose any additional *A. variegatum* ticks.

Systematic dipping was discontinued on each farm 2 years following the most recent collection of *A. variegatum* on the farm, and thus all systematic dipping was discontinued in May 1970. In May 1970, a complete inspection of livestock on St. Croix was made and no *A. variegatum* ticks were found.

On March 17, 1971, a Consumer and Marketing Service (C&MS) meat inspector collected a male *A. variegatum* tick from a sheep at the local abattoir.

A complete inspection on the farm of origin disclosed two additional A. variegatum ticks, from a sheep and from a cow. The premises was placed under insular quarantine, and systematic dipping commenced.

A campaign to eradicate B. microplus and Dermacentor nitens ticks from the Virgin Islands is underway, and systematic dipping began on the island of St. Croix in January 1972.

Coumaphos and Dioxathion Dips Approved

Effective September 27, 1971, Part 72, Title 9, Code of Federal Regulations, was amended to recognize as permitted dips coumaphos (Co-Ral) 25 percent wettable powder used at a strength of 0.125 to 0.250 percent and dioxathion (Delnav) used at a strength of 0.125 to 0.160.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife -- if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

PROTECT
Use Pesticides Safely
FOLLOW THE LABEL
U.S. DEPARTMENT OF AGRICULTURE